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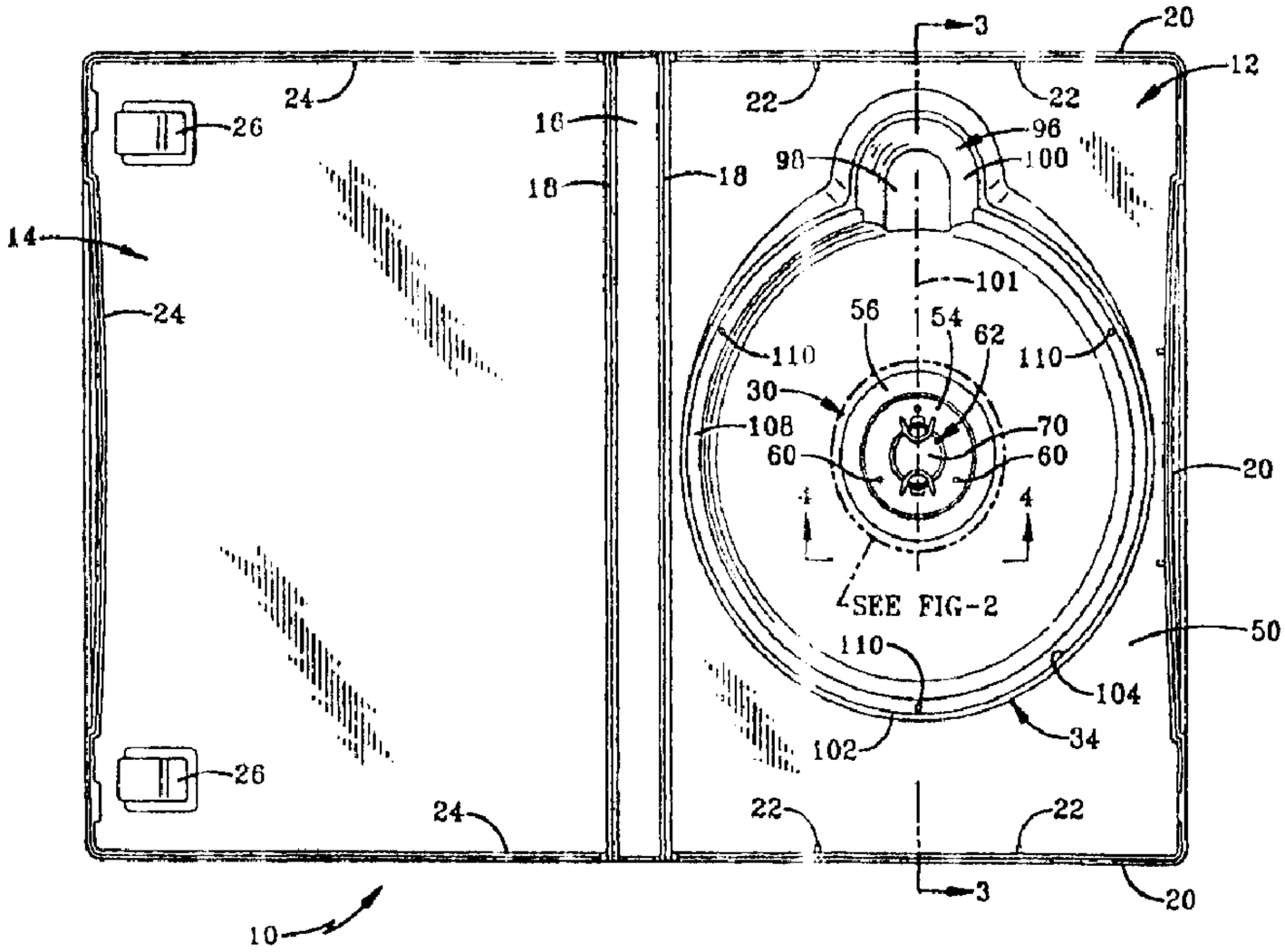
(54) **CONTENANT POUR STOCKAGE DE SUPPORTS ENREGISTRES**

(54) **STORAGE CONTAINER FOR RECORDED MEDIA**



(57) Cette invention a trait à des contenants (10) destinés au stockage de disques enregistrés (32), lesquels contenants comportent un moyeu central (30) entouré d'une paroi extérieure (20), celle-ci se trouvant à une certaine distance du moyeu. Ce moyeu est pourvu de deux bras élastiques (64) coopérant pour retenir le trou central du disque. La paroi extérieure renferme un compartiment permettant l'accès d'un doigt (96) et placé dans l'alignement d'un plan de référence (101) recoupant chaque bras élastique (64) du moyeu (30). Cet agencement fait que la force produite par l'utilisateur lorsqu'il enlève le disque est directement transmise aux bras élastiques, ce qui les amène à se décentrer et à libérer le support enregistré.

(57) This invention relates to storage containers (10) for recorded media discs (32) that includes a centrally disposed hub (30) surrounded by, and spaced from, an outer wall (20). The hub includes a pair of resilient arms (64) that cooperate to retain the disc's centrally disposed hole. The outer wall contains a finger access recess (96) that is positioned to align with a reference plane (101) bisecting each resilient arm (64) of the hub (30). This arrangement allows the force generated by the user when removing the disc to be directly transmitted to the resilient arms, causing the resilient arms (64) to deflect and release the recorded media.

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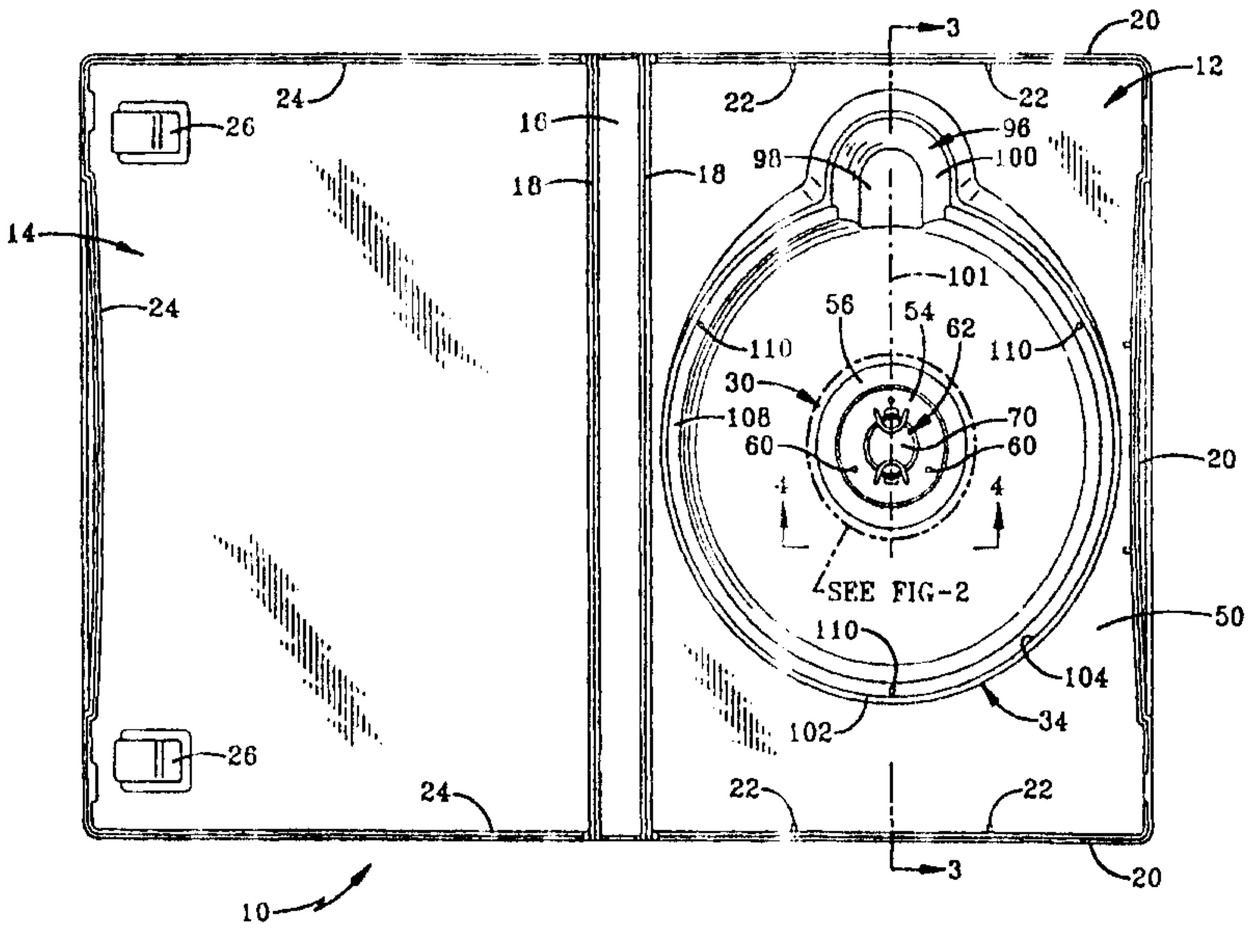


(57) Abstract

This invention relates to storage containers (10) for recorded media discs (32) that includes a centrally disposed hub (30) surrounded by, and spaced from, an outer wall (20). The hub includes a pair of resilient arms (64) that cooperate to retain the disc's centrally disposed hole. The outer wall contains a finger access recess (96) that is positioned to align with a reference plane (101) bisecting each resilient arm (64) of the hub (30). This arrangement allows the force generated by the user when removing the disc to be directly transmitted to the resilient arms, causing the resilient arms (64) to deflect and release the recorded media.

STORAGE CONTAINER FOR RECORDED MEDIA

BACKGROUND OF THE INVENTION

Technical Field

This invention relates generally to storage containers for recorded media and, more particularly, to a storage container having a centrally disposed hub that engages and selectively retains an item of recorded media. Specifically, the present invention is directed to a storage container for recorded media employing a hub that releasably secures an item of recorded media such as a compact disc or DVD while substantially preventing the compact disc or DVD from experiencing bending stresses while the item of recorded media is stored in the storage container.

Background Information

In recent times, most recorded music is purchased by the consumer either on a cassette tape or a compact disc. Cassettes tapes and compact discs have supplanted vinyl records and 8-track tapes as the dominant forms of recorded music. Along with the growth of compact discs, numerous storage containers have been developed to hold the discs during shipping, display for sale, and subsequent home storage of the discs. A disc may spend over 99% of its life stored in one such storage container because the same storage container is typically used to ship the disc, to display the disc, and to store the disc at the home of the consumer. Most of the storage containers known in the art hold the compact disc on a hub that engages the center hole of the disc to hold the disc in place in the storage container.

Digital versatile discs (DVDs) have recently been developed and are expected to grow as more consumers are exposed to the benefits of a digital

video picture combined with a digital audio track on a single DVD. DVDs also have a larger storage capacity than a compact disc and may be used to hold feature length films as well as multiple music recordings. It is likely that DVDs may also be used to hold data in computer readable forms. One problem with DVDs is that they currently trade durability for their increased storage capacity. It is believed that a DVD may be damaged over time by the forces that are commonly created in a compact disc storage container. These forces are the outwardly directed forces created by the hub that typically radially engages the interior wall that forms the center hole in a disc. Compact discs are durable enough to be insensitive to this force but it is believed that a DVD will eventually warp as a result of these constant radial forces. Such warping can prevent the data on a DVD from being correctly read by a DVD player.

In view of the perceived problems with the constant bending forces, the industry has moved in the direction of requiring all DVD storage containers to loosely retain the DVD such that it may freely rotate while securely retained by the storage container. The storage container thus must retain the DVD in a manner that allows it to freely rotate while also securely holding the DVD during a standard drop test. It is thus desired in the art to provide a storage container for a DVD that holds the DVD without creating constant bending stresses in the DVD while securely retaining the DVD to prevent it from coming loose.

Another problem with storage containers used for DVDs is that segments of the industry have moved in the direction of requiring a centrally-disposed button to be depressed before the DVD is released by the storage container. Although these devices are functional and adequately retain the DVD during drop tests, some consumers find the requirement of depressing the center button annoying. Most consumers are accustomed to simply grasping the edge of a compact disc and pulling the compact disc off of the centrally-disposed hub of a storage container. These same consumers feel

that they should be able to remove a DVD in the same manner especially because a DVD is similar to a CD in appearance. The center-button DVD storage containers prevent such removal by preventing the consumer from grabbing the edge of the DVD. The storage containers having the center button require the user to hold the storage container with one hand while depressing the center button with the index finger of the other hand. The DVD is then lifted by the thumb and middle finger of the hand depressing the center button. Such removal is difficult for people having weak hands, long fingernails, small hands, or large fingers. In particular, a person with long fingernails or large fingers may have difficulty in depressing the center button adequately to release the DVD from the center hub.

It is thus desired in the art to provide a storage container for a DVD that allows the DVD to be easily removed from the storage container without requiring the user to depress buttons.

Another problem with existing storage containers that allow compact discs and DVDs to be easily removed from a hub is that some of these devices create large bending forces in the discs when the disc is removed from the hub. These storage containers typically allow a person to grasp the edge of the disc at any location about its perimeter and pull upwardly causing the disc to engage the hub, compress a portion of the hub, and then pop off of the hub. Although these discs certainly allow for easy removal, the stresses experienced by the disc during the removal process are thought to be large enough to damage a DVD. It is thus desired in the art to provide a storage container for a DVD that allows the DVD to be quickly and easily removed without creating significantly large bending stresses in the DVD during the removal process.

SUMMARY OF THE INVENTION

In view of the foregoing, it is an objective of the present invention to provide a storage container for an item of recorded media that allows the item of recorded media to be easily removed from the storage container.

Another objective of the present invention is to provide a storage container for an item of recorded media that is particularly suited to storing a DVD.

Yet another objective of the present invention is to provide a storage container for an item of recorded media that securely retains the item of recorded media while not subjecting the item to constant bending stresses during storage.

Still another objective of the present invention is to provide a storage container for an item of recorded media that allows the item of recorded media to be easily removed from the storage container without subjecting the item to substantial bending forces.

A further objective of the present invention is to provide a storage container for an item of recorded media that prevents the improper removal of the item of recorded media from the storage container.

Yet a further objective of the present invention is to provide a storage container for an item of recorded media that allows the item of recorded media to freely rotate within the storage container while being stored in the storage container.

Still a further objective of the present invention is to provide a storage container for an item of recorded media that allows a DVD to be removed from the storage container without damaging the DVD when a user grasps the edge of the DVD and pulls upwardly.

Yet a further objective of the present invention is to provide a storage container for an item of recorded media that supports the item of recorded

media at its center and periphery to prevent it from experiencing stresses when it is installed and stored.

An additional objective of the present invention is to provide a storage container for an item of recorded media that securely holds a DVD on a centrally-disposed hub during the standard industry drop test.

Still an additional objective of the present invention is to provide a storage container for an item of recorded media that may be molded from a suitable plastic in a mold having a single integral cavity.

Still an additional objective of the present invention is to provide a storage container for an item of recorded media that allows the item of recorded media to be removed from the storage container with a one-handed operation.

Another objective of the present invention is to provide a storage container for an item of recorded media having inner and outer supports that do not engage the information-containing area of the item of recorded media.

Another objective of the present invention is to provide a storage container for an item of recorded media having a plurality of raised bumps that solely support the item of recorded media from below to reduce friction between the storage container and the item of recorded media allowing the item of recorded media to rotate or spin with essentially no friction while in the storage position.

Another objective of the present invention is to provide a storage container for an item of recorded media that includes a raised portion in the center of the hub that prevents a user from inadvertently or mistakenly manipulating the resilient arms of the hub.

A further objective of the present invention is to provide a storage container for recorded media that includes only a single finger access hole that is aligned with the resilient arms of the hub such that the item of recorded media may not be improperly removed from the hub.

Another objective of the present invention is to provide a storage container for an item of recorded media that is of a simple construction, that achieves the stated objectives in a simple, effective, and inexpensive manner, and that solves the problems and that satisfies the needs existing in the art.

These and other objectives and advantages are obtained by the storage container for an item of recorded media of the present invention, the general nature of which may be stated as including a base having an upper surface; a hub projecting upward from the upper surface of the base; the hub including a fixed body and a pair of resilient arms, the resilient arms disposed on substantially opposite sides of the fixed body; an outer wall surrounding the hub; the outer wall having a finger access hole; and the finger access hole being aligned with the resilient arms.

BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the invention, illustrative of the best mode in which applicants have contemplated applying the principles, is set forth in the following description and is shown in the drawings and is particularly and distinctly pointed out and set forth in the appended claims.

FIG. 1 is a top plan view of a storage container for an item of recorded media depicted in an open position;

FIG. 2 is an enlarged top plan view of the hub encircled by the line labeled FIG. 2 in FIG. 1;

FIG. 3 is an enlarged sectional view taken along line 3-3 of FIG. 1;

FIG. 4 is an enlarged side view of the hub taken along line 4-4 of FIG. 1;

FIG. 5 is a fragmentary sectional view of the storage container with an item of recorded media disposed above the hub prior to engaging the hub, the hub being in a resting position;

FIG. 6 is a view similar to FIG. 5 with the item of recorded media initially engaging the hub;

FIG. 7 is a view similar to FIG. 5 depicting the item of recorded media fully engaging the hub while it is being installed on the hub;

FIG. 8 is a view similar to FIG. 5 with the item of recorded media in the storage position on the hub;

FIG. 9 is a view similar to FIG. 5 depicting the item of recorded media being removed from the hub; and

FIG. 10 is a view similar to FIG. 5 depicting the item of recorded media having been fully removed from the hub.

Similar numerals refer to similar parts throughout the specification.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The storage container for recorded media according to the present invention is depicted in the accompanying drawings and is indicated generally by the numeral 10. Storage container 10 includes a base, indicated generally by the numeral 12, that is hingedly attached to a lid 14. In the embodiment of the present invention depicted in the drawings, the hinged connection between base 12 and lid 14 is formed by a back wall 16 and a pair of continuous living hinges 18. Base 12 includes a sidewall 20 that extends about three sides of base 12 attached to living hinge 18. Sidewall 20 includes a plurality of reinforcing ribs 22. Lid 14 may also have a sidewall 24 that extends about the three sides of lid 14 not connected to living hinge 18. Sidewall 24 may be configured to cooperate with sidewall 20 to form a frictional connection that retains storage container 10 in a closed position. Lid 14 may also include a pair of clips 26 that may be used to hold printed material that describes the material on the item of recorded media stored in storage container 10. Storage container 10 may be fabricated from any of a wide variety of materials but it is preferred that it be

fabricated from a plastic strong enough to resist breaking when dropped during a drop test.

In accordance with the objectives of the present invention, storage container 10 includes a hub 30 that is configured and adapted to selectively receive an item of recorded media 32 in a secure manner while allowing item 32 to rotate freely on hub 30 within storage container 10. Hub 30 also allows item 32 to be quickly and easily removed from hub 30 while not creating excessive bending stresses in item 32. Storage container 10 also includes an outer wall 34 that is spaced from hub 30 but fully surrounds hub 30. Outer wall 34 is configured and adapted to prevent a user from improperly removing item 32 of recorded media from storage container 10. Outer wall 34 also cooperates with hub 30 to prevent item 32 from experiencing excessive bending stresses when item 32 is placed into storage container 10. Outer wall 34 further cooperates with hub 30 to allow item 32 to freely rotate while in the stored position while experiencing minimal friction. Outer wall 34 also functions to allow item 32 to be easily removed from storage container 10.

Item of recorded media 32 is in the form of a disc in the preferred embodiment of the present invention. Item 32 may be a typical compact disc or DVD which each have an outer diameter defined by the substantially circular outer edge 36 of item 32. Item 32 also includes an upper surface 38 and a lower surface 40 that are both substantially planar. The distance between upper surface 38 and lower surface 40 of item 32 defines the thickness of item 32. Item 32 further includes an inner wall 42 that is substantially circular and defines an inner hole 44 that has a hole diameter. As is known in the art, the machine-readable information stored on item of recorded media 32 extends from a location adjacent to but spaced from outer edge 36 of item 32 across a middle area 45 to an area adjacent to but spaced from inner wall 42 of item 32 (see Fig. 5). The information is typically spaced farther from inner wall 42 than outer edge 36 such that an

inner area 46 surrounding inner wall 42 does not contain machine-readable information whereby that area may be used to hold item of recorded media 32 while it is being played in an appropriate machine.

Base 12 of storage container 10 includes a bottom wall 50 that is substantially planar and includes an upper surface 52. Hub 30 extends upwardly from bottom wall 50 in substantially the center of base 12. Hub 30 includes a first support platform 54 that is carried a distance above bottom wall 50 of base 12 by an annular spacing wall 56. In the preferred embodiment of the present invention, annular spacing wall 56 is sloped between first support platform 54 and bottom wall 50. In other embodiments of the present invention, annular spacing wall 56 may be perpendicular to both bottom wall 50 and first support platform 54. In still other embodiments of the present invention, annular spacing wall 56 may not be continuous.

The upper surface 58 of first support platform 54 is spaced above upper surface 52 of bottom wall 50 so as to provide a space or gap under lower surface 40 of item 32 when item 32 is in the stored position in storage container 10 as depicted in FIG. 8. This gap prevents item 32 from experiencing any friction in the area of item 32 that is disposed above upper surface 52 when item 32 is in the storage position. Annular spacing wall 56 is also configured to place item 32 at a level with respect to bottom wall 50 such that a user can easily fit his finger or thumb below lower surface 40 of item 32 and upper surface 52 of bottom wall 50 to remove item 32 from storage container 10. Annular spacing wall 56 further provides strength to base 12 by providing a protuberance in the center of base 12 that adds rigidity to storage container 10.

First support platform 54 is substantially circular and provides a lower support to item 32 when item 32 is in the storage position as depicted in FIG. 8. Specifically, a plurality of bumps 60 extend upward from upper surface 58 of first support platform 54 to provide essentially frictionless support to item 32. In the preferred embodiment of the present invention,

three bumps 60 are disposed equally about first support platform 54 such that their support is evenly distributed to item 32. Other numbers of bumps 60 may be used in other embodiments of the present invention. Each bump 60 is preferably rounded such that minimal contact between bumps 60 and item 32 is provided. The minimal contact creates essentially no friction between bumps 60 and item 32 when item 32 is in the storage position. The reduced friction is important because item 32 is permitted to freely rotate on hub 30 while in the storage position. In other embodiments of the present invention, bumps 60 may be formed in other shapes that perform the same functions as rounded bumps 60. Bumps 60 are disposed sufficiently inwardly on first support platform 54 so as not to contact the areas of recorded information on item of recorded media 32.

Hub 30 further includes a substantially stable, nonmovable body 62 that extends up from first support platform 54 and a pair of resilient arms 64 that are each cantilevered from first support platform 54. Body 62 includes a sidewall 66 that is substantially annular about a majority of its circumference while being broken by a pair of inset curves 68 that define area that are configured to at least partially receive resilient arms 64 as shown in Fig. 2. Body 62 further includes an upper wall 70 that vaults between sidewall 66.

Body 62 is adapted and configured to prevent the user from manipulating or damaging resilient arms 64 when the user attempts to push down on hub 30. Such protection is accomplished by configuring body 62 to be substantially taller than each resilient arms 64. As such, upper wall 70 of body 62 is disposed at a height that is larger than the tallest height of each resilient arm 64. The relative heights may be seen in Fig. 5. In the embodiment of the invention depicted in the drawings, each arm 64 is short enough to flex inward and fit under upper wall 70 of body 62. This characteristic prevents a user's finger or thumb from contacting resilient arms 64 when the user presses the center of body 62 with the finger or

thumb. As described in the Background of the Invention section above, some prior art devices function by having the user depress the center of the hub of the storage container. Hub 30 of storage container 10 functions by preventing any action from occurring when the center (upper wall 70 of body 62) of hub 30 is pushed on by the user. Such force is transmitted from upper wall 70 through sidewall 66 to first support platform 54 into annular spacing wall 56 to bottom wall 50 of base 12. The force applied by a user is thus not transmitted into resilient arms 64 causing them to release item 32 in any way.

Each resilient arm 64 is separated from body 62 by a slot 72 that extends from first support platform 54 upwardly through sidewalls 66, through upper wall 70, back down through sidewalls 66, and then outwardly into first support platform 54. As may be perhaps best seen in FIG. 2, slots 72 do not extend radially from body 62. The portion of each slot 72 that is formed in first support platform 54 forms an angle with a reference line that passes through a diameter of body 62. The ends of each slot 72 are closer together than they would be if slots 72 were radially disposed with respect to body 62. The configuration of slots 72 thus allows each resilient arm 64 to be easily deflected by reducing the amount of material supporting each arm 64.

Each resilient arm 64 includes a pair of substantially horizontal support beams 74 that extend between slot 72 and an opening 76 that is formed in first support platform 54 adjacent each resilient arm 64. The sizing and configuration of opening 76 and slot 72 causes each horizontal support beam 74 to be thin such that resilient arm 64 may be easily deflected inward toward the center of hub 30 upon application of a small force. Such easy deflection is important when DVDs are stored in storage container 10 because it is desirable to minimize the bending forces experienced by the DVD when it is inserted into and removed from storage container 10. Each horizontal support beam 74 is tapered such that it's thin end connects with

a vertical leg 78 of resilient arms 64. The thin ends of each support beam 74 function as living hinges that allow vertical leg 78 to flex inwardly easily. The thicker end of horizontal support beam 74 merges with first support platform 54 and provides the cantilevered support for each resilient arm 64.

As may be seen in FIG. 4, vertical leg 78 of resilient arm 64 extends up from the inner end of horizontal support beam 74 to a location that is below the upper surface of sidewall 66 of body 62. An upper arm wall 80 extends radially inward from the upper end of vertical leg 78 such that slot 72 has a relatively constant dimension throughout its length. In the preferred embodiment of the present invention, upper arm wall 80 has a curved inner surface that is complementary to inset curves 68 of body 66. Upper arm wall 80 is also distinctly below upper wall 70 of body 62. As discussed above, this configuration prevents the user from contacting upper arm wall 80 of resilient arm 64 when the user exerts force on body 62.

In accordance with another object of the present invention, the outwardly facing surface of each vertical leg 78 form a diameter, indicated by the dimension line labeled with the numeral 82, that is larger than the outer diameter of sidewalls 66 that is indicated by the dimension line labeled with the numeral 84. Each diameter 82 and 84 is, however, smaller than the hole diameter of item 32 such that inner wall 42 of item 32 does not contact either sidewall 66 or vertical leg 78 when item 32 is in the storage position. These dimensions allow item 32 to freely rotate on hub 30 when item 32 is securely retained on hub 30 by body 62 and resilient arms 64. The larger diameter 82 also ensures that item 32 will contact arms 64 when removed from container 10 instead of contacting fixed body 62.

In accordance with another objective of the present invention, a detent 86 projects from each vertical leg of each resilient arm 64. Detents 86 are configured to cooperate together to have a diameter, indicated by the dimension line labeled by the numeral 88 in FIG. 8, that is larger than the hole diameter of item 32. As such, each detent 86 is disposed above item

30 when item 30 is in the storage position. Detents 86 thus cooperate to retain item 32 on hub 30 when item 32 is in the storage position as depicted in FIG. 8.

Each detent 86 is dual tapered and thus includes an upper taper 90 and a lower taper 92 that allow item 32 to be inserted on and removed from hub 30. In the preferred embodiment of the present invention, an intermediate wall 94 connects upper taper 90 to lower taper 92. In other embodiments of the present invention, upper taper 90 joins directly with lower taper 92.

As noted above, storage container 10 includes outer wall 34 in addition to hub 30. In accordance with another objective of the present invention, outer wall 34 only allows the user to access item of recorded media 32 in a single, predetermined location that is specifically designed to transfer force from item 32 to resilient arms 64. Outer wall 34 thus ensures that the user of storage container 10 will remove item of recorded media 32 in the proper manner whereby any harmful bending stresses in item of recorded media 32 are minimized. Outer wall 34 achieves this limitation by blocking access to item of recorded media 32 by the user about all of the perimeter of item of recorded media 32 but for a single finger access hole 96.

As may be seen in FIG. 3, finger access hole 96 has a lower surface 98 that is disposed below upper surface 52 of bottom wall 50. The location of lower surface 98 provides extra room for the user to grasp item 32 when item 32 is in the storage position depicted in FIG. 8. The sidewall 100 of finger access hole 96 is dished so as to provide a smooth transition and entrance for the finger or thumb of the user. Finger access hole 96 is aligned with resilient arms 64 such that a reference line 101 that bisects each resilient arm 64 also bisects finger access hole 96. This arrangement causes the user to exert force on item 32 in a direction that causes the force to be directly transferred to resilient arms 64 such that at least one arm 64

will immediately deflect and start to release item 32. The thinness of support beams 74 also assists in the immediate reaction in arms 64. The provision of only a single finger access hole 96 also forces the user to properly remove item 30 from container 10. Some prior art storage containers allow the user to grasp the disc on either side of a hub thus squeezing and bending the disc. Such an occurrence is prevented in storage container 10 because only a single finger access hole 96 is provided. These configurations and arrangements reduce the amount of undesirable bending forces being experienced in item 32 during removal of item 32 from storage container 10.

Aside from finger access hole 96, outer wall 34 extends entirely about the outer periphery of item 32 to prevent the user from grasping outer edge 36 of item 32 when item 32 is in the storage position. In accordance with another objective of the present invention, outer wall 34 includes a blocking wall 102 that extends upwardly from bottom wall 50 of storage container 10. Blocking wall 102 is substantially perpendicular to bottom wall 50 and extends to a height that is above upper surface 38 of item 32 when item 32 is in the storage position. Blocking wall 102 has an inner surface 104 that has an inner diameter that is greater than the outer diameter of item 32 such that item 32 does not contact any portion of blocking wall 102 when item 32 is in the storage position. Such a configuration also provides no friction between blocking wall 102 and item 32 when item 32 is free to rotate on hub 30.

Outer wall 34 further includes a second support platform 106 that extends entirely about outer wall 34 except for the area where finger access hole 96 interrupts outer wall 34. Second support platform 106 has an upper surface 108 that is at substantially the same height and substantially planar with upper surface 58 of first support platform 54. Outer wall 34 further includes a plurality of bumps 110 that project upwardly from second support platform 106. Each bump 110 is substantially similar to bumps 60 disposed

on first support platform 54 such that bumps 110 and bumps 60 are substantially at the same height. Bumps 110 are also preferably rounded to provide minimal friction between item 32 and bumps 110. In the preferred embodiment of the present invention, three bumps 110 are equally dispersed about outer wall 34. Bumps 110 and 60 thus cooperate to support item of recorded media 32 in a substantially frictionless manner such that item 32 may rotate freely on hub 30 while in the storage position. A different number of bumps may be used in other embodiments of the present invention.

The operation of storage container 10 is depicted in FIGS. 5-10. In FIG. 5, item of recorded media 32 is completely removed from storage container 10. Item of recorded media 32 is placed on storage container 10 first positioning item of recorded media 32 above hub 30 such that inner hole 44 of item 32 is substantially aligned with body 62 and resilient arms 64. The user then places item 32 into contact with detents 86 on resilient arms 64. This position is depicted in FIG. 6. The user then applies substantially even force as indicated by the arrows labeled with numeral 112. Force 112 is transmitted by item 32 to detents 86 and particularly upper taper 90 of detents 86. The force on upper tapers 90 causes each resilient arm 64 to flex inwardly as depicted in FIG. 7. A movement of each resilient arm is indicated by the arrow labeled with the numeral 114. The user maintains force 112 until item 32 gently snaps over detents 86 to the storage position as depicted in FIG. 8. The force that is required to deflect each arm 64 inwardly is small and not large enough to cause damage to a DVD. Arms 64 deflect inwardly easily due to the dimensions of support beams 74 and the thickness of vertical legs 78.

Once item 32 is below detents 86, resilient arms 64 flex back outwardly to their resting position. As described above, the outer surface of each resilient arm 64 does not contact inner wall 42 of item 32. In this position, item 32 is supported from below by bumps 60 and 110 while being

supported from above by lower taper 92. Item 32 does not contact any portion of blocking wall 102. Item 32 is thus free to rotate and is only loosely held by storage container 10. The supporting forces provided by bumps 60 and 110 prevent item 32 from experiencing damaging bending stresses if the user applies additional downward force on item once it is in the storage position. Item 32 is thus supported at its inner portion and at its outer portion when it is in the storage position. Furthermore, if the user attempts to push the center of hub 30 to release item 32 from its storage position, upper wall 70 of body 62 remains stable and prevents the user from accidentally manipulating or damaging resilient arms 64.

Item of recorded media 32 is removed from storage container 10 by user when user places a finger or a thumb in finger access hole 96 and grasps the edge of item 32 that is disposed in finger access hole 96. The user then applies force in the direction indicated by the arrow labeled by numeral 116 to item 32 causing it to pivot on the bump 110 that is disposed opposite finger access hole 96 on reference line 101. This action is depicted in FIG. 9. Force 116 thus causes item 32 to tilt about its pivot causing inner wall 42 closest to finger access hole 96 to engage lower taper 92 causing resilient arms 64 to deflect inwardly as indicated by the arrow labeled by numeral 118. Edge 42 closest to the pivot thereafter contacts lower taper 92 of the other resilient arm 64 causing it to deflect inwardly as indicated by the arrow labeled with numeral 120. The user continues to exert force 116 until item 32 deflects each resilient arm 64 inwardly far enough to allow item of recorded media 32 to pass over detents 86 and become free from hub 30. The user may then lift item 32 as depicted in FIG. 10 in the direction of the arrows labeled by numeral 122 to remove item of recorded media 32 from storage container 10. Item 32 experiences little damaging bending stresses during removal from hub 30 due to the alignment of finger access hole 96 and arms 64 as well as the thin dimensions of support beams 74. Furthermore, the location of the single finger access hole 96 causes inner

edge 42 of item 30 to tilt back and engage arm 64. If the user could grasp both sides of item 30, inner edge 42 would likely be flexed and lifted upwardly into both detents simultaneously creating undesirable stresses in item 30.

Accordingly, the improved storage container for recorded media is simplified, provides an effective, safe, inexpensive, and efficient device which achieves all the enumerated objectives, provides for eliminating difficulties encountered with prior devices, and solves problems and obtains new results in the art.

In the foregoing description, certain terms have been used for brevity, clearness and understanding; but no unnecessary limitations are to be implied therefrom beyond the requirement of the prior art, because such terms are used for descriptive purpose and are intended to be broadly construed.

Moreover, the description and illustration of the invention is by way of example, and the scope of the invention is not limited to the exact details shown or described.

Having now described the features, discoveries and principles of the invention, the manner in which the improved storage container for recorded media is constructed and used, the characteristics of the construction, and the advantageous, new and useful results obtained, the new and useful structures, devices, elements, arrangements, parts and combinations, are set forth in the appended claims.

CLAIMS

We claim the following:

1. A storage container for releasably securing an item of recorded media having an outer edge defining an outer diameter and an inner edge defining a centrally disposed inner hole having a hole diameter, said storage container comprising:

a base having an upper surface;

a hub projecting upward from said upper surface of said base;

said hub including a fixed body and a pair of resilient arms, said resilient arms disposed on substantially opposite sides of said fixed body such that a reference line collinear with a diameter of the hub bisects each arm;

an outer wall surrounding said hub;

said outer wall having a finger access hole; and

said finger access hole being aligned with said resilient arms such that said reference line also bisects said finger access hole.

2. The storage container of claim 1 wherein said hub includes a first support platform having an upper surface, said fixed body and said resilient arms projecting upward from said upper surface.

3. The storage container of claim 2 wherein said outer wall includes a second support platform having an upper surface, said upper surface of said second support platform being substantially planar with said upper surface of said first support platform; said second support platform adapted to support the outer edge of the item of recorded media.

4. The storage container of claim 3 further comprising a plurality of bumps projecting upward from said first and second support platforms; each of said bumps being rounded and adapted to support the item of recorded media when the item is stored in the storage container; at least one of said bumps disposed on said reference line.

5. The storage container of claim 1 wherein there is only said finger access hole in said outer wall.

6. The storage container of claim 1 wherein said outer wall includes a blocking wall disposed about the entire circumference of said outer wall except for the area where said finger access hole passes through said outer wall; said blocking wall adapted to extend higher than the item of recorded media when the item of recorded media is securely received on said hub.

7. The storage container of claim 6 wherein said blocking wall has an inner diameter that is adapted to be larger than the outer diameter of the item of recorded media.

8. The storage container of claim 1 wherein said body includes a sidewall and an upper wall that vaults said sidewall, said upper wall disposed higher than each of said resilient arms.

9. The storage container of claim 8 wherein said sidewall has an outer diameter; each of said resilient arms having a vertical leg; said vertical legs cooperating to having an outer diameter; said outer diameter of said vertical legs being greater than said outer diameter of said sidewall; and both of said outer diameters adapted to be less than the hole diameter of the item of recorded media.

10. The storage container of claim 1 further comprising a dual-tapered detent carried by each of said resilient arms.

11. In combination, a storage container for releasably securing an item of recorded media and an item of recorded media in the shape of a disc;

said disc having an outer edge defining an outer diameter and an inner edge defining a centrally disposed inner hole having a hole diameter, said disc having an inner area adjacent said inner edge and a middle area radially between said inner area and said outer edge;

said disc further having an upper surface and a lower surface;

said storage container including a base having an upper surface;

a hub projecting up from said base;

said hub including a fixed body and a pair of resilient arms, said resilient arms disposed on substantially opposite sides of said fixed body;

said fixed body having a sidewall and an upper wall vaulting said sidewall;

each of said resilient arms having a vertical leg and an upper wall; and

said upper wall of said fixed body disposed above said upper wall of each of said resilient arms;

said fixed body and said resilient arms disposed in said inner hole of said disc, said upper wall of each of said resilient arms disposed above said upper surface of said disc.

12. The storage container of claim 11 wherein said fixed body includes a pair of diametrically opposed inset curves; said resilient arms at least partially disposed in the areas defined by said inset curves.

13. The storage container of claim 12 wherein each of said vertical legs has an outer surface, said outer surfaces cooperating to have an outer diameter;

said sidewall of said body having an outer diameter; said outer diameter of said sidewall being less than said outer diameter of said resilient arms; said outer diameter of said resilient arms adapted to be less than said hole diameter of said item of recorded media.

14. The storage container of claim 13 wherein said hub includes a first support platform carried above said upper surface of said base by an annular support wall, said fixed body and said resilient arms extending up from said first support platform.

15. The storage container of claim 14 further comprising an outer wall having a second support platform, said second support platform and said first support platform being substantially planar; said disc resting on said support platforms when said disc is securely stored in said storage container such that said support platforms cooperate to provide lower support to said disc.

16. In combination, a storage container for releasably securing an item of recorded media and an item of recorded media in the shape of a disc;

said disc having an outer edge defining an outer diameter and an inner edge defining a centrally disposed inner hole having a hole diameter, said disc having an inner area adjacent said inner edge and a middle area radially between said inner area and said outer edge;

said storage container including a base having an upper surface;

a support wall extending up from said base;

a first support platform carried by said support wall, said first support platform having an upper surface;

a fixed body and a pair of resilient arms projecting up from said upper surface of said first support platform; said resilient arms disposed on substantially opposite sides of said fixed body;

said fixed body and said pair of resilient arms being disposed in said inner hole;

an outer wall surrounding said hub;

said outer wall having a second support platform, said second support platform having an upper surface;

said upper surface of said second support platform being substantially planar with said upper surface of said first support platform; and

said outer edge of said disc being support by said second support platform and said inner area of said disc being supported by said first support platform, said middle area of said disc being carried above said upper surface of said base.

17. The combination of claim 16 further comprising a dual-tapered detent carried by each of said resilient arms above said disc; said disc being free to rotate about said fixed body and said resilient arms and above said first support platform and below said dual-tapered detents; said detents cooperating to have a diameter larger than said hole diameter of said disc.

18. The combination of claim 17 further comprising a plurality of bumps projecting up from said upper surfaces of said first and second support platforms, said disc being carried on said bumps.

19. The combination of claim 18 wherein each of said resilient arms has a vertical leg and an upper wall; said fixed body having a sidewall and an upper wall; said upper wall of said fixed body disposed above said upper wall of each of said resilient arms such that a person depressing upper wall of said fixed body does not deflect said resilient arms.

20. The combination of claim 19 wherein each of said vertical legs has an outer surface, said outer surfaces cooperating to form an outer diameter of

said resilient arms; said sidewall of said body having an outer diameter; said outer diameter of said sidewall being less than said outer diameter of said resilient arms; said outer diameter of said resilient arms being less than said hole diameter of said disc.

21. A method of removing an item of recorded media in the shape of a disc from a storage container wherein the disc has an outer edge and an inner edge and wherein the storage container includes a base, a hub projecting up from the base, and an outer wall projecting up from the base; the disc being securely received on the hub with the outer wall surrounding the disc; the outer wall having a single finger access hole; the hub having a fixed body and a pair of diametrically opposed resilient arms that are aligned with the finger access hole; each of the resilient arms having a detent that is at least partially disposed over a portion of the disc; and a portion of the disc disposed in the finger access hole above the base; said method comprising the steps of:

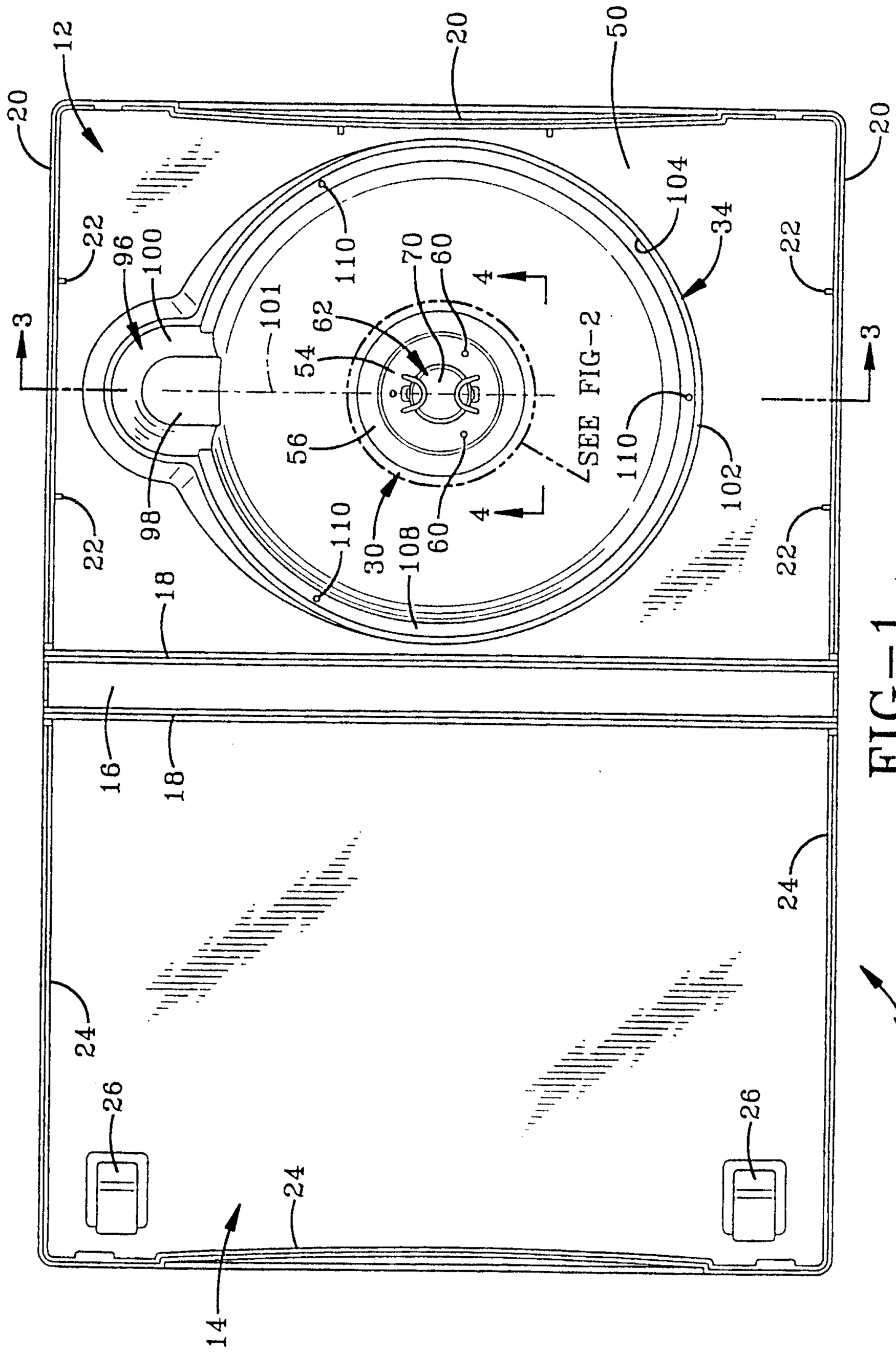
grasping the portion of the disc in the finger access hole;

providing an upward force to the grasped portion of the disc;

continuing to provide the force until the inner edge of the disc contacts and deflects each of the resilient arms inwardly; and

lifting the grasped portion of the disc until the inner edge passes over each of the detents such that the disc is removed from the storage container.

22. The method of claim 21 further comprising the step of supporting the outer edge of the disc in a location that is diametrically opposite the grasped portion of the disc such that the disc pivots at the supported location.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SEE FIG-2
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FIG-1

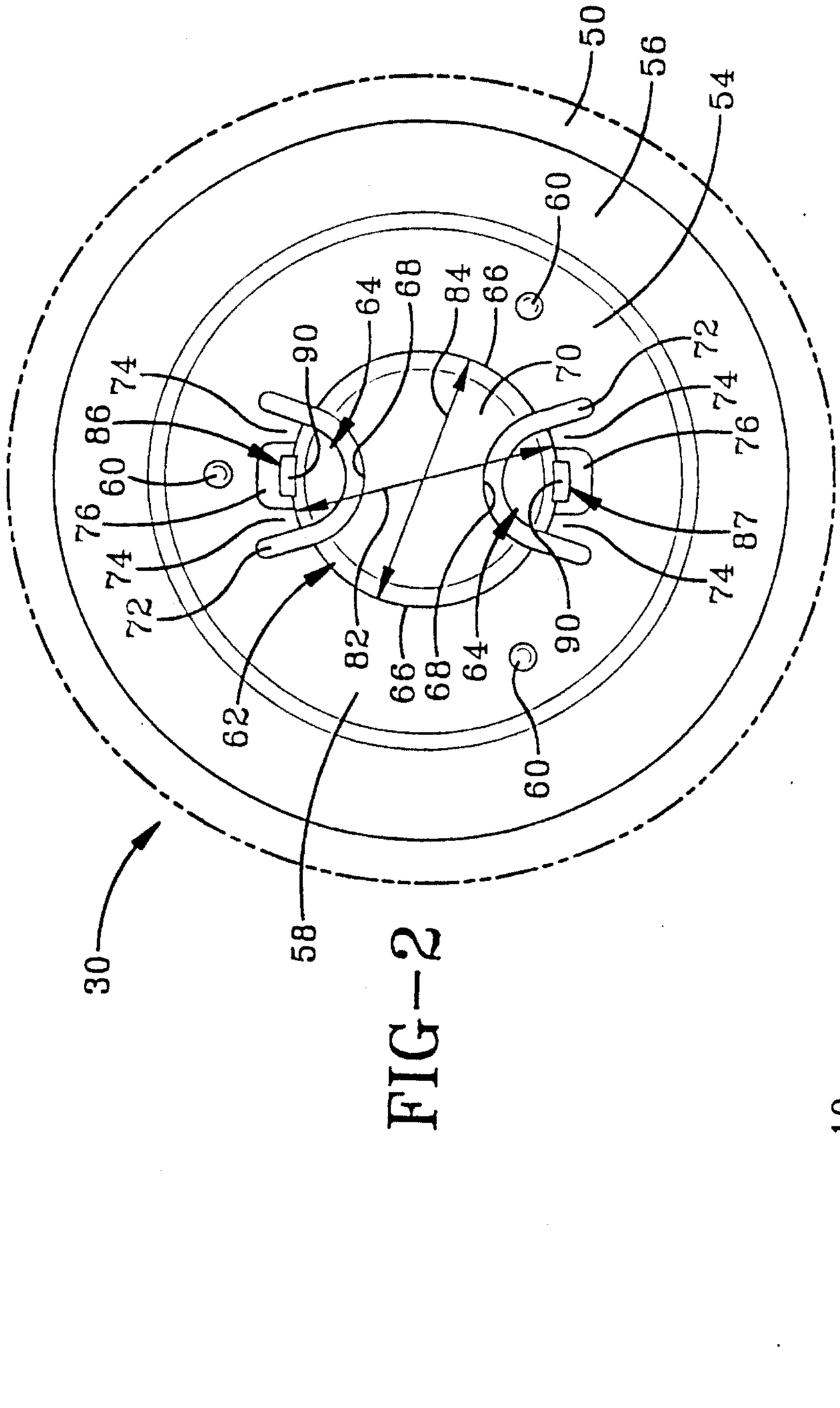
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FIG-2

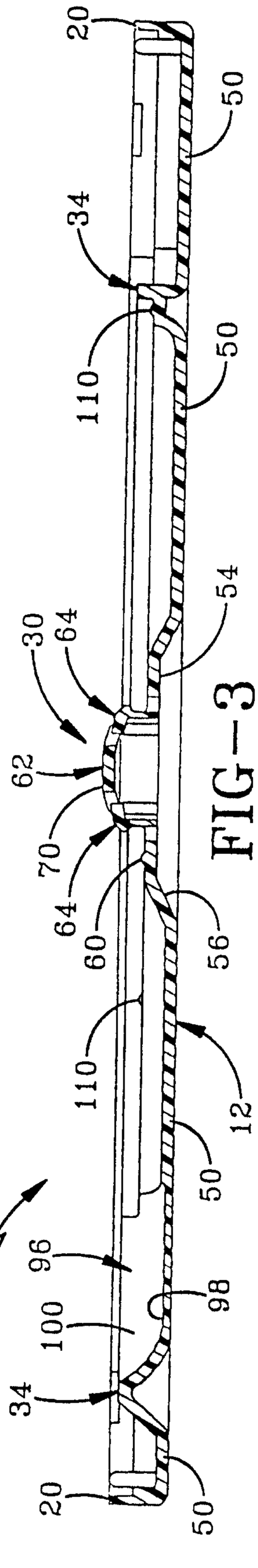
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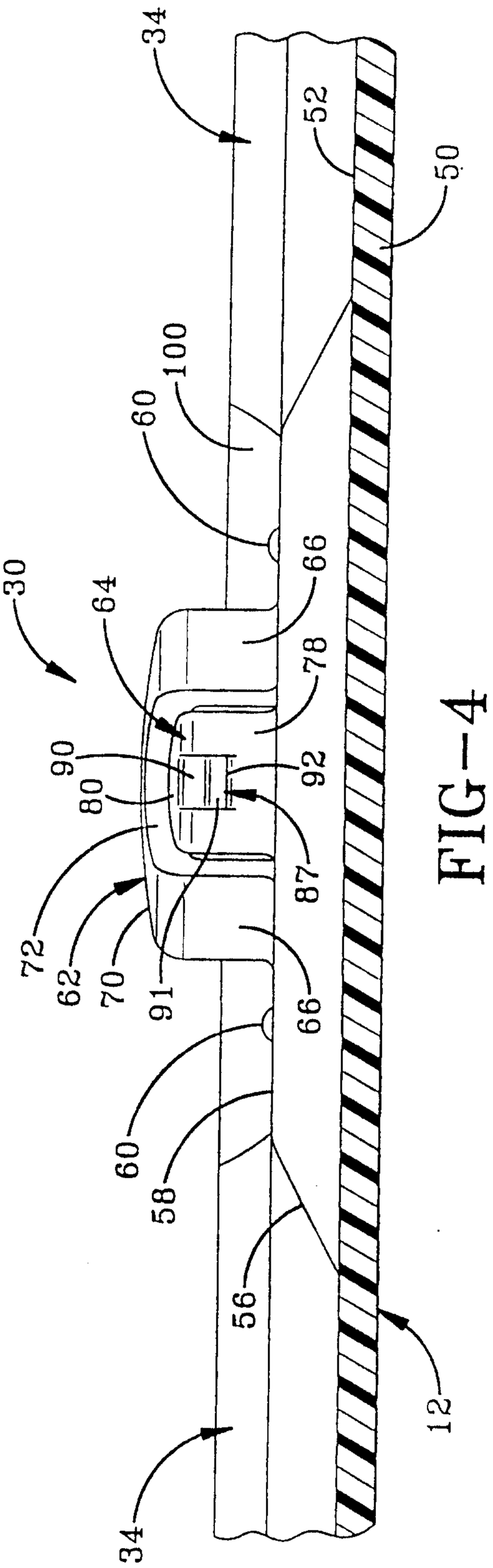
FIG-3



FIG—4

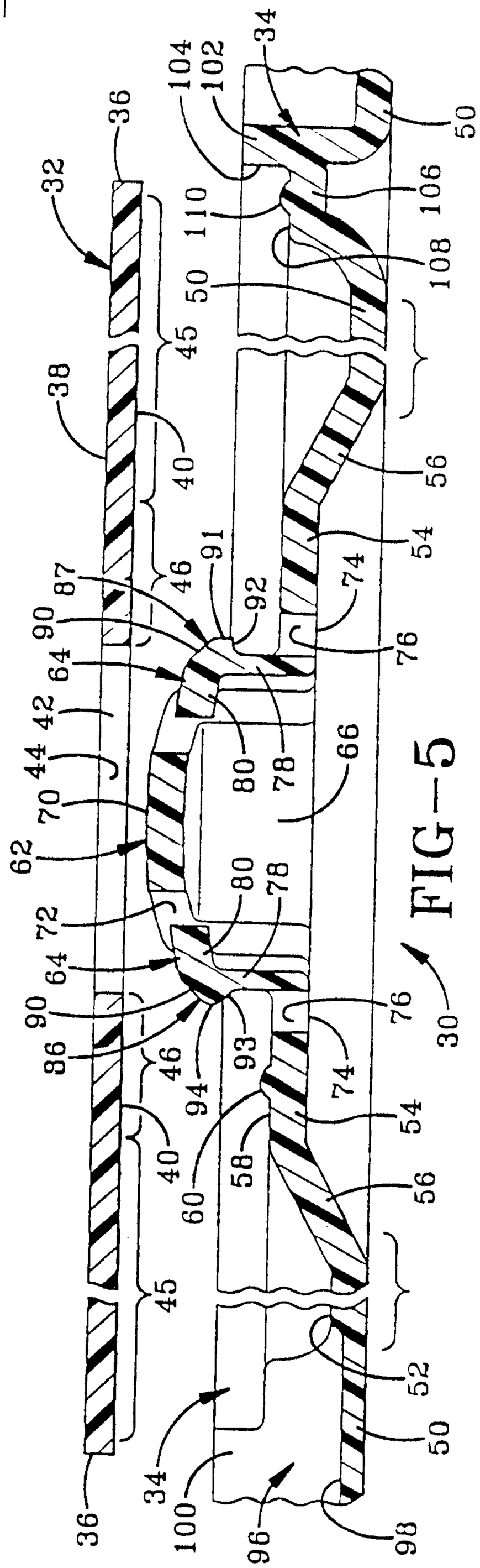

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FIG-5

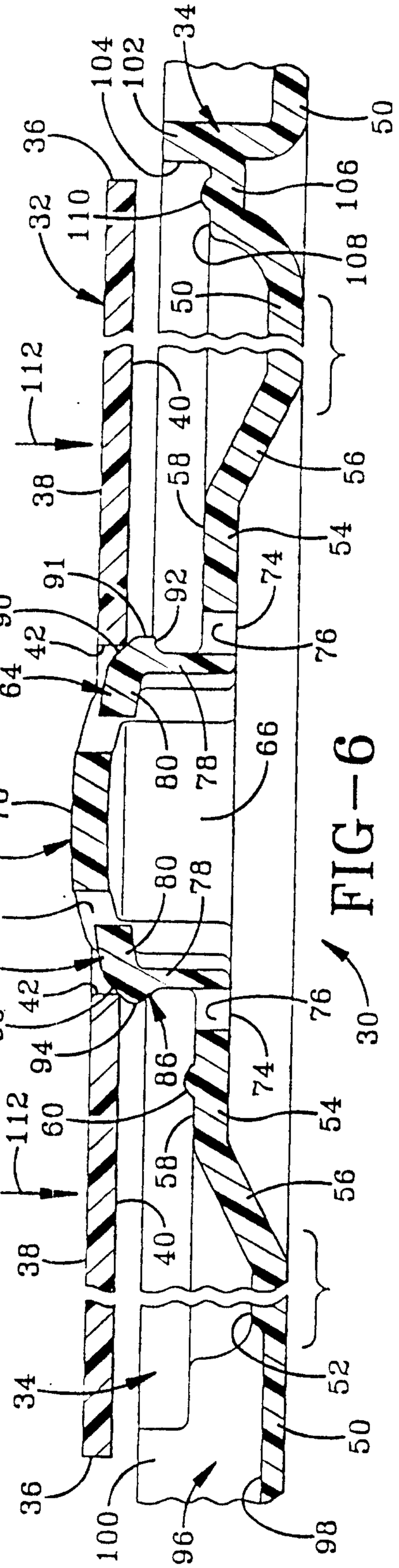
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FIG-6

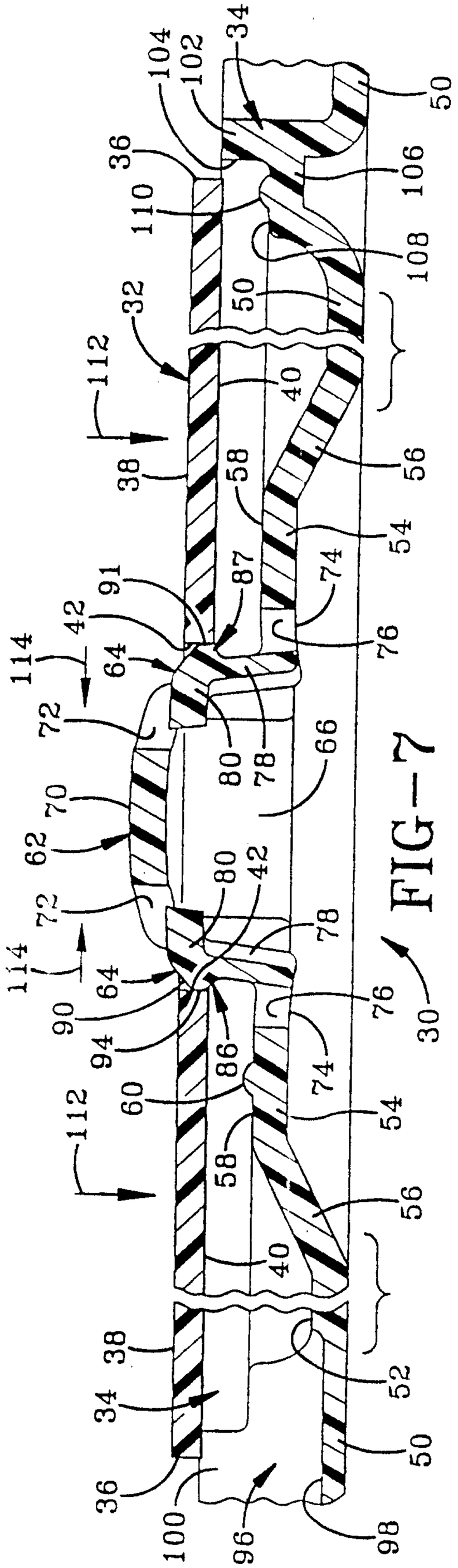
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FIG-7

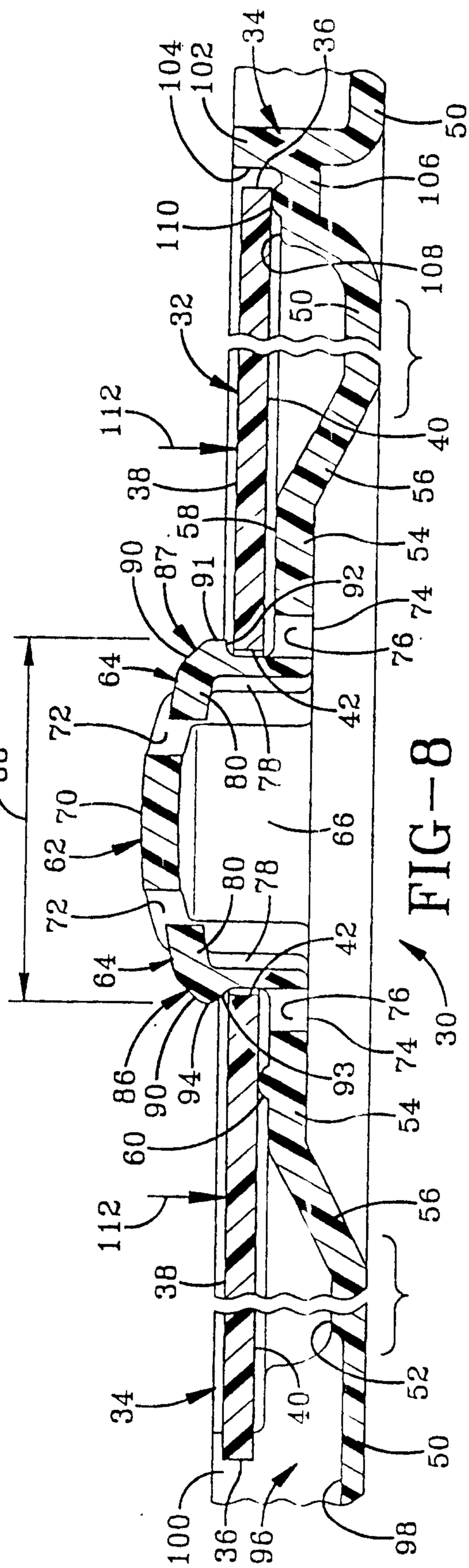
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FIG-8

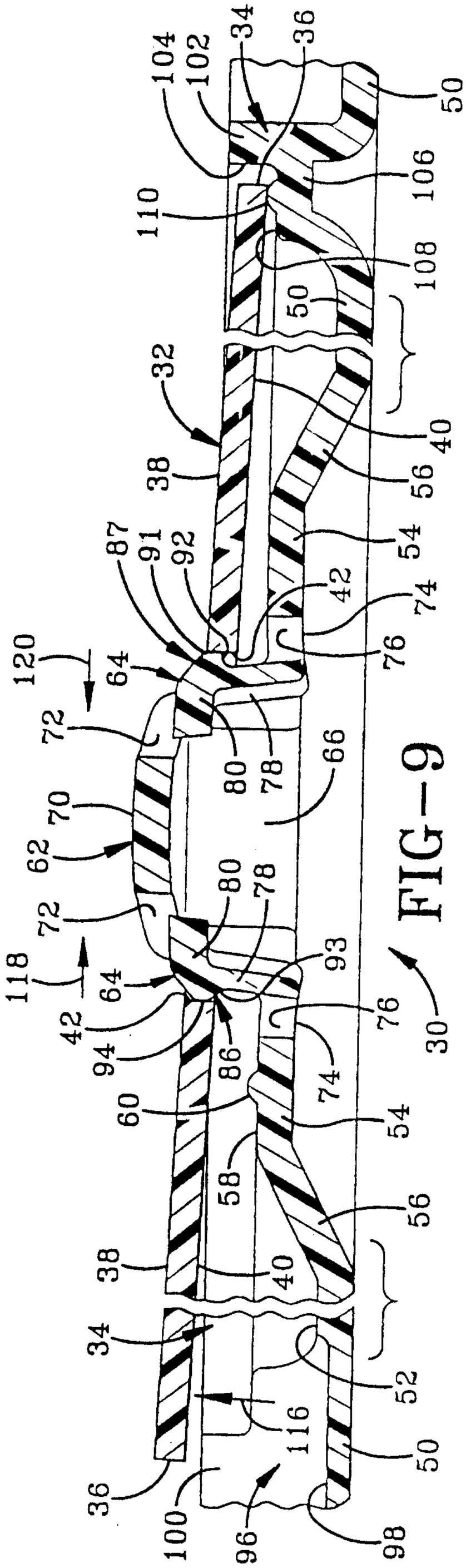
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FIG-9

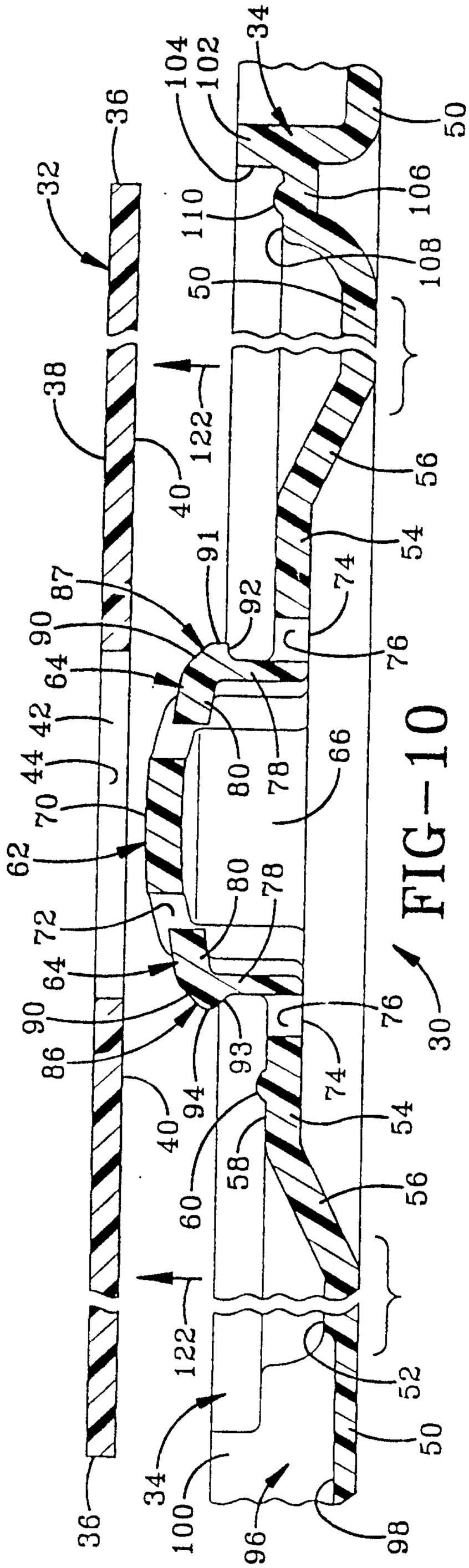
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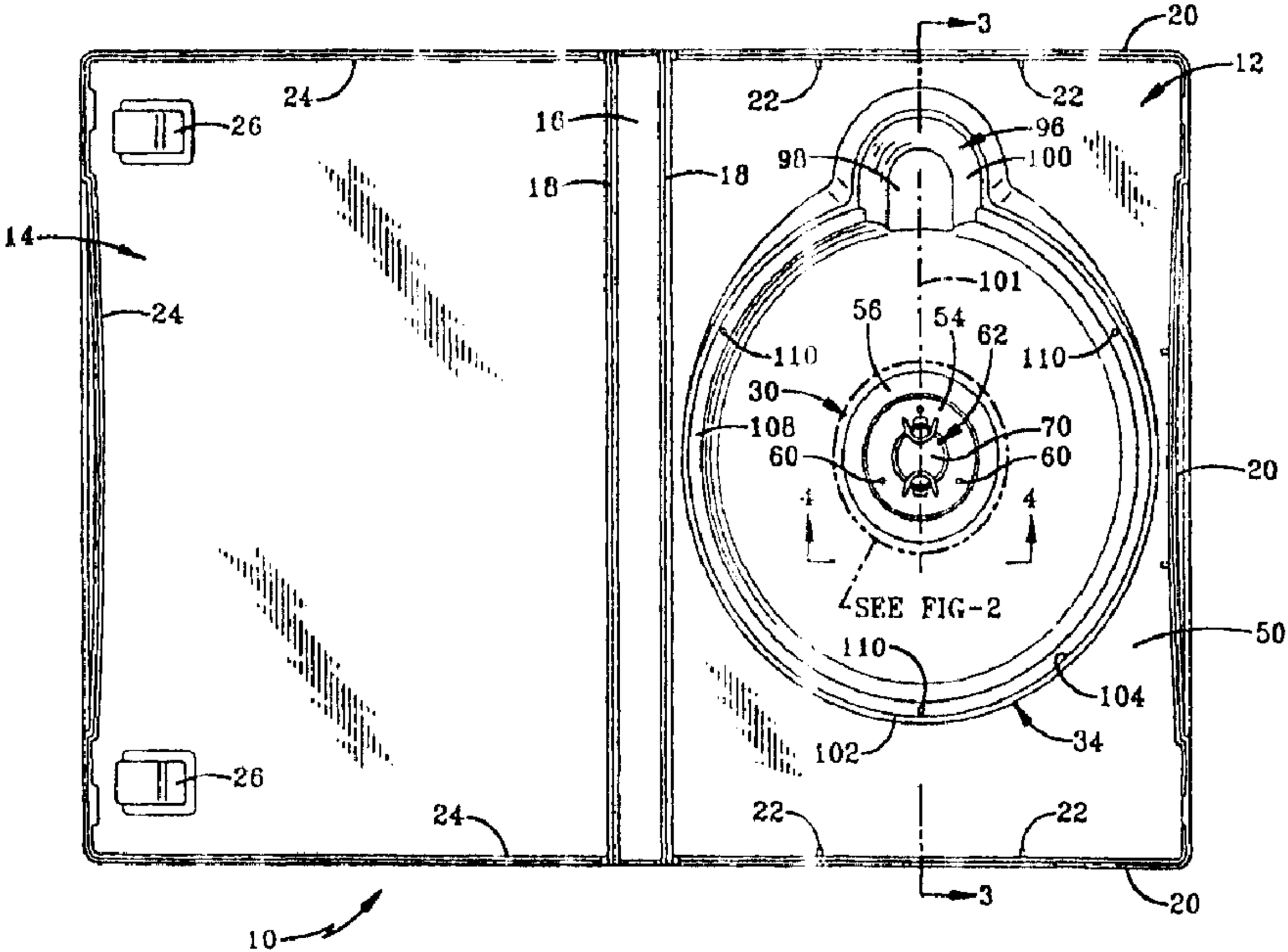
FIG-10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SEE FIG-2
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